

APPLICATION FOR PATENT

Inventors: Baruch Segal and Joseph. S. Daniel

5 Title: **Dieting system and method based on controlled carbohydrate intake**

FIELD AND BACKGROUND OF THE INVENTION

10 The present invention relates to dieting systems and methods, and, more specifically, to systems and methods that restrict daily carbohydrate intake by providing food kits with defined carbohydrate content.

The widespread problems of obesity and overweight in humans have attracted the attention of the medical and nutrition communities through the past few decades. The answers to these problems lie both in the realm of medical treatments, through
15 drugs and medical operations, and in that of nutrition, through various diet programs and methods. While drastic medical measures may indeed lead to permanent weight loss, most diet programs and methods fail to produce long lasting results. In particular, programs based on the restriction of the diet to certain foods while eliminating other diet ingredients, or on restricting calories, fail to yield permanent
20 beneficial weight loss. This is particularly true for obese or grossly overweight persons.

Low carbohydrate diets are known. Particularly prominent is the Adkins diet, which is based on the theory that overweight people eat too many carbohydrates. The human body burns both fat and carbohydrates for energy, but carbohydrates are used
25 first. By drastically reducing the carbohydrate intake, and by eating more protein and fat, the human body loses weight naturally because it burns stored body fat more efficiently.

The Adkins diet sets few limits on the amount of food one can eat but instead severely restricts the kinds of food allowed to foods traditionally regarded as "rich",
30 e.g. meat, eggs, cheese, etc., while forbidding refined sugar, milk, white rice, or white flour. The diet has a mandatory two-week induction period of extreme restriction on the carbohydrate intake to less than 20 grams per day. This induces a state of ketosis, which means the body burns its own fat for fuel. The ketosis state is one major

disadvantage of the Adkins diet, having by itself, or in combination with other aspects of this diet, significant negative health-impacting side effects.

There is thus a widely recognized need for, and it would be highly advantageous to have, an efficient diet system and method, which does not restrict the type of food ingredients a person can eat, leaving a well-balanced diet, while providing significant permanent weight loss. There is also a need for a low-carbohydrate diet that will not induce ketosis, thus avoiding the kinds of negative side effects present in existing low carbohydrate diets.

10. SUMMARY OF THE INVENTION

According to the present invention there is provided a system for reducing human body weight to a permanent optimal weight level, comprising a portable kit that includes a plurality of foods with a known total carbohydrate content, and spoiling prevention means for keeping the foods from spoiling.

According to the present invention there is provided a method for permanently reducing body weight in humans, comprising the steps of determining an optimal daily carbohydrate intake, organizing foods in a portable device according to the optimal carbohydrate intake, and freely consuming the foods from the kit throughout the day.

According to the present invention there is provided a portable dieting apparatus comprising an asymmetrically shaped kit that includes a plurality of food storage units, and a plurality of foods having a known total carbohydrate content and stored in the storage units according to a carbohydrate content order.

According to one feature in the portable dieting apparatus of the present invention, the kit further comprises spoiling prevention means to keep said foods from spoiling.

According to yet another feature in the portable dieting apparatus of the present invention, the kit further comprises color-coding means for marking the carbohydrate content order.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

5 FIG. 1 is a photograph of a preferred embodiment of a diet kit according to the present invention: a) internal view; b) external view.

FIG. 2 shows in (a) an embodiment of a kit comprising an asymmetrical one-piece enclosure having a plurality of compartments, and in (b) a one-piece enclosure kit with cooling packs inserted in spaces between the compartments.

10

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is of a new type of diet system and method, based on controlled carbohydrate daily intake, which provides a dieting person a full range of
15 foods, yet leads to significant permanent weight loss. In other words, the controlled carbohydrate intake system and method disclosed herein allow to bring a human body weight to a permanent optimal weight level. The invention is based on the premise that most existing diet systems and methods fail because they entail a dieting regime that is difficult to follow over a long period of time. Even with the best intentions and
20 will power, an obese or overweight person who wants to follow known dieting regimes eventually slacks off and gives up, normally because the regime appears to be ineffective after a while, or has requirements that are too draconian or induce unwanted side effects. In contrast, the present invention allows a person to eat the entire normal range of foods, but ensures that the total daily carbohydrate intake is
25 limited, so that over time there is a gradual loss of weight, eventually stabilizing in a permanent, normal weight. Moreover, the present invention leads to permanent weight loss even in persons that do not engage in physical activity. In contrast with other low-carbohydrate diets, and in particular with the Adkins diet, the method of the present invention does not require a state of ketosis at any time, and therefore removes
30 a major source of negative side-effects.

The present invention is based on the concept of a "carbohydrate bank" from which the dieting person may eat any food up to a given total daily carbohydrate content. We will refer to this as the "total daily carbohydrate rule". The system defines a minimum, optimum and maximum daily carbohydrate content for a person, based on

optimum weight vs. height requirements. The disclosure will henceforth refer to "required daily content" as the optimum daily carbohydrate intake needed by a person following the system and method of the present invention. The system provides a special portable dieting apparatus in the form of a food kit that comprises, in separate storage units, an asymmetric arrangement of a plurality of foods of known total carbohydrate content, correlated with the required daily content. The kit includes an entire range of foods, chosen from a large food list, which are preferably protected from spoiling by prevention means such as cooling packs. The only limitation on the type of food included is that the total weight of carbohydrates in the pyramid is less than a given number, preferably of the required daily content. The kit allows the user to have a varied diet, while making sure that the total carbohydrate daily intake is kept under a required limit.

FIG. 1 is a photograph of a preferred embodiment of a portable dieting apparatus according to the present invention in the form of a kit **100**: a) internal view; b) external view. Kit **100** has preferably a shape that allows stacking of a plurality of separate food container or bags, arranged in groups or "levels". As used in this disclosure, a "container" implies any enclosure designed to separate one food from another. In this disclosure, "food" refers to both solid and liquid substances. Alternatively, as shown in FIG. 2, the containers may be just compartments in a one-piece enclosure, the enclosure having an asymmetric shape used for identifying the position of foods of a given carbohydrate content. Kit **100** can be made of any suitable material, either soft-sided or hard-sided. The kit preferably has an asymmetrical shape, most preferably resembling a truncated pyramid, with a substantially flat wide bottom side **102** and a substantially narrower top side **104**. In this disclosure, "top" and "bottom" indicate spatial arrangement, and not necessarily a vertical structure. The largest group of containers (in a bottom level near the bottom side) preferably includes foods selected from the group of essentially carbohydrate free foods. The second largest group includes foods selected from the group of somewhat higher, limited carbohydrate content foods, the third largest group includes foods selected from the group of even higher carbohydrate content foods, etc. The top group (in a top level near the top side) typically includes one food selected from the group of highest carbohydrate content foods. In each group, each food is placed in a separate container. In the exemplary embodiment of FIG. 1, there are 8 such containers arranged in three groups, forming a pyramid of foods: a bottom group **106** that includes 4 containers of

"no carbohydrate" foods that can be eaten freely, in any amount, a middle group **108** that includes 3 containers of "small carbohydrate amount" foods that have to be eaten in controlled, smaller amounts, and a top group **110** that includes one container of "carbohydrate-rich" food that has to be eaten in an extremely careful, controlled way.

5 The number of groups and containers within each group is exemplary. It is understood, and within the scope of the present invention, that the kit may include a different number of stacked groups, and that each group may include a different number of containers than shown in FIG. 1. The constant guiding principle in any embodiment of the kit is that the group (level) with the largest number of containers includes foods
10 selected from the group of lowest (or no) carbohydrate content, while the smallest group with the smallest number (preferably one) of containers includes a food selected from the group of highest carbohydrate content foods.

Returning to FIG. 1, in order to prevent spoilable foods (e.g. meats, milk, etc.) from being spoiled, the kit is preferably cooled by spoiling prevention means. These
15 preferably include known cooling elements such as cooling packs that may be refrigerated, or any other known portable cooling devices. The groups are also preferably color-coded, for example by using different color containers (same color for all containers in a level), containers with different color covers (same cover color for all containers in the same level), or colored cooling packs disposed between or near
20 the containers. In a preferred embodiment using colored cooling packs, bottom group **106** has disposed between its containers green cooling packs **116'**, middle group **108** has disposed between its containers yellow cooling packs **116''**, and top group **110** has disposed around its single container red cooling packs **116'''**. In this exemplary case, the green-yellow-red colors resemble traffic lights, providing the user with a visual
25 reminder similar in meaning to those lights: thus, "green" means "go", i.e. "eat freely low carbohydrate type foods", "yellow" means "be careful" i.e. "eat fewer foods with larger carbohydrate content", and "red" means "stop" i.e. "eat as little as possible from this type of high carbohydrate content food".

FIG. 2a shows in cross section an embodiment of another portable dieting
30 apparatus in the form of a kit **200** comprising an asymmetrical one-piece enclosure **202** having a plurality of compartments **204**. The external shape need not follow the contour as shown, and may be similar to the one in FIG. 1. Clearly, the one-piece embodiment fulfills the same function of compartmentalizing foods of different carbohydrate content, carbohydrate-free foods being stored in a bottom level **206**, a

carbohydrate rich food being stored in a top level 208, and foods with increasing carbohydrate content being stored between the bottom level and the top level. Other shapes that provide a clear differentiation between various carbohydrate content foods are also within the scope of the present invention. The asymmetric shape itself may be enough to indicate which foods belong to the carbohydrate free group (i.e. the bottom level compartments), and which belong to the carbohydrate rich group (i.e. the top level compartment). Optionally, color means similar to those in FIG. 1 can be attached to each of the compartments or levels in FIG. 2a (not shown). Furthermore and preferably, spoiling prevention means, e.g. in the form of cooling packs, may be introduced inside one or more of the compartments of kit 200, or in specially designed spaces 220 provided between the compartments, as shown in FIG. 2b.

As mentioned, the kit allows the user to have a varied diet without worrying about calories, by making sure that the total carbohydrate daily intake is kept under a required limit. The content of foods in each container is chosen such that the total amount of food in the kit sums up to a required daily carbohydrate content. For simplicity and ease of use, this daily carbohydrate content is measured in "units" of 5 grams. The maximum daily carbohydrate content allowed for an obese or overweight person is preferably 16 units, i.e. a total of 80 grams of carbohydrates. The optimum carbohydrate allowed for the same person content is 12 units, i.e. 60 grams carbohydrates. The maximum and optimum number of units depends of course on the person's weight and height. Thus, obese or overweight children will obviously have smaller maximum and optimum allowed daily carbohydrate contents.

The amount of carbohydrates in each food is well known. In particular, various lists and other data sources that provide carbohydrate weight per total weight information are well known and readily accessible. Tables 1-3 below provide exemplary lists of no carbohydrate content foods (Table 1), moderate carbohydrate content foods (Table 2) and high carbohydrate content foods (Table 3). It is therefore quite simple to calculate the carbohydrate (and therefore the food) amount allowed at each level or group in the kit, so that the total carbohydrate content of the kit does not exceed 80 grams. Moreover, the kit would typically include less than the total carbohydrate amount allowed per diem, with the rest being for example allocated to home meals. Thus the kit may for example include foods stacked in groups as shown in FIG. 1, with a total carbohydrate content of 60 grams, while 20 grams of carbohydrates are allowed for home consumption that day.

Table 1 - CARBOHYDRATE-FREE OR NEGLIGIBLE CARBOHYDRATE CONTENT

5

MEAT: beef, lamb, turkey, veal, fowl, lamb, etc.

INTERNAL PARTS: liver, kidneys, heart, tongue, brain, sausage meat, etc.

10

FISH: tuna, salmon, sardines, cooked fish, salted fish, smoked fish, etc.

DAIRY AND FOWL PRODUCTS: cheeses of all types, butter, eggs, salad oil, yoghurt, margarine, etc.

15

Table 2 - MEDIUM CARBOHYDRATE CONTENT FOODS

20	ITEM	QTY	UNITS
	AVOCADO	100 GR	1
	WATERMELON	100 GR	1
	NUTS	10 GR	0.5
25	COCONUTS	50 GR	3
	PEARS	100 GR	2.5
	PINEAPPLES	100 GR	2
	GREENPEAS - COOKED	100 GR	2
	PERSIMON	25 GR	3
30	PEACHES	100 GR	2
	ARTICHOKES	100 GR	1
	GRAPEFRUIT	HALF	2
	PEANUTS - ROASTED	30 GR	1
	BAMIA - COOKED	100 GR	1
35	GUAVAS	50 GR	2
	CARROTS	80 GR	1
	SUNFLOWER SEEDS	25 GR	1
	CHERRIES	100 GR	3
	MILK - FULL CREAM	100 GR	1
40	- SKIM	100 GR	1
	PEANUT BUTTER	25 GR	1
	EGGPLANT	100 GR	1
	TEHINA	50 GR	0.5
	LEMONS	100 GR	1.5
45	BREAD - LOW CALORIE	25 GR	1.5
	PINEAPPLE JUICE	100	2.5
	TOMATO JUICE	100	1
	ORANGE JUICE	100	2
	MELON	170	2
50	MANGOES	100	2

	MANDARINES	100	2
	SOUPS	200 GR	2-0
	APRICOTS	50 GR	1
	BEETROOTS	50 GR	1
5	LENTILS	25 GR	3
	CHESTNUTS	50 GR	4
	RASPBERRIES	100 GR	2
	FALAFEL	50 GR	2
	CACTUS FRUIT	50 GR	1
10	RAISINS	25 GR	3
	CLEMENTINES	100 GR	2
	SOYA FLOUR	25 GR	1
	POMEGRANATES	50 GR	2
	PLUMS	100 GR	2
15	ALMONDS	30 GR	1
	FIGS	100 GR	3
	ORANGES	200 GR	4
	STRAWBERRIES	100 GR	2.5

20

Table 3 – HIGH CARBOHYDRATE CONTENT FOODS

	ITEM	QTY	UNITS
25			
	PEARS IN SYRUP	100 GR	5
	RICE – COOKED	100 GR	5
	PINEAPPLE IN SYRUP	100 GR	5
30	PEACHES IN SYRUP	100 GR	5
	PEACHES DRIED	50 GR	7
	NOODLES – COOKED	175 GR	9
	BITTER LEMON	100 GR	6
	BISCUITS	2	3
35	BEER	1 PINT GLASS	2
	BANANAS	1	5
	BRANDY	25 GR	4
	GIN	25 GR	4
	GINGER ALE	25 GR	6
40	JELLY	100 GR	4
	ICECREAM	50 GR	2
	HONEY	25 GR	5
	WHISKEY	25 GR	4
	VERMOUTH – SWEET	50 GR	5
45	VERMOUTH - DRY	50 GR	3
	SEMOLINA POWDER	25 GR	4
	SEMOLINA PUDDING	100 GR	4
	DOUGHNUTS	50 GR	6
	CYDER	1 GLASS	3.5
50	SYRUP	15 GR	2.5

	SPAGETTI – COOKED	170 GR	10
	CAKES – DRY	50 GR	7
	- WITH CREAM	50 GR	7
	- WITH ICING	50 GR	8
5	- WITH FRUIT	50 GR	7
	- APPLE PIE	50 GR	3.5
	GRAPES	100 GR	3
	PUDDING – POWDER	100 GR	2
	- WITH EGG	100 GR	2
10	- WITH MILK	100 GR	5
	BEANS – DRIED	50 GR	5
	RASPBERRY SYRUP	100 GR	5
	PITA BREAD	25 GR	3
	PANCAKES	50 GR	4
15	FRUIT IN SYRUP	100 GR	5
	HUMUS – CHICKPEAS	50 GR	6
	MILK – CONCENTRATED	100 GR	2
	HALVAH	50 GR	5
	CHALLAH	25 GR	3
20	TAPIOCA – UNCOOKED	100 GR	4
	- PUDDING	100 GR	5
	YOGURT – FRUIT-CHOCOLATE	100 GR	3
	WINE – DRY	50 GR	3
	- SWEET	50 GR	4
25	BREAD – MEDIUM SLICED		
	- DARK	25 GR	3
	- WHITE	25 GR	3
	BUNS	50 GR	6
	LEMONADE	225 GR	5
30	LIQUER	25 GR	5
	TONIC WATER	170 GR	2.5
	GRAPEFRUIT JUICE – SWEET	100 GR	3
	ORANGE JUICE – SWEET	100 GR	3
	MANDARINES IN SYRUP	100 GR	4
35	MATZOS	25 GR	3.5
	MACARONI – COOKED	170 GR	10
	- WITH CHEESE	100 GR	5
	MARMALADE	15 GR	4
	APRICOTS - IN SYRUP	100 GR	5
40	- DRIED	50 GR	6
	SUGAR – BROWN	15 GR	3
	- WHITE	15 GR	3
	TOFFEE SWEETS	25 GR	4
	CORNFLAKES	25 GR	4
45	BREAD TOASTS	25 GR	3
	QUAKER OATS – UNCOOKED	25 GR	3
	- COOKED	100 GR	3
	COCA COLA	100 GR	3
	CORNFLOUR	25 GR	5
50	FLOUR – BARLEY	25 GR	4

	- OATS	25 GR	4
	- CORN	25 GR	4
	- POTATO	25 GR	4
	- RICE	25 GR	4
5	- WHEAT	25 GR	4
	COCOA	25 GR	2.5
	JAMS	15 GR	2
	MILK CHOCOLATE	50 GR	5
	BITTER CHOCOLATE	50 GR	5
10	PLUMS – DRIED	50 GR	7
	- IN SYRUP	100 GR	5
	YEAST	100 GR	7.5
	CHERRIES	50 GR	4
	FIGS IN SYRUP	100 GR	8
15	FIGS DRIED	25 GR	3
	STRAWBERRIES IN SYRUP	100 GR	5
	CORN ON COB – COOKED	100 GR	4
	DATES – DRIED	25 GR	4
	POTATOES – COOKED	100 GR	4
20	- CHIPS	25 GR	3
	SWEET POTATOES – BAKED	100 GR	7
	APPLES – DRIED	25 GR	3

25 Note: carbohydrate value marked in units

* 1 unit = 5 grams carbohydrate

** alcoholic drinks are carbohydrate free but high-caloried, which raises the number of units.

30

In use, a user would typically prepare a kit each day by choosing foods to be stored in each container of each level, from a list of items with known carbohydrate content. For this purpose, one may use any list of foods that provides the carbohydrate content, for example Tables 1-3 herein. One may form example choose to fill the four
35 containers of the "no carbohydrate" bottom group **106** in FIG. 1 with items from Table 1 above such as beef, chicken, veal, lamb, turkey, etc., each of which has little or no carbohydrates, fish, cheeses, vegetables, and other known "no carbohydrate" foods. Since these foods do not have any (or very little) carbohydrate content, they may be eaten in basically unlimited amounts. Practically, the amounts will be limited by the
40 volume of the bottom group containers, but the user may eat more of these foods at home or in a restaurant, without affecting the diet regimen. Similarly, the 3 middle group **108** containers in FIG. 1 may be filled with 100 grams of avocado (equivalent to one carbohydrate unit or simply "one unit"- see Table 2), 30 grams of roasted peanuts (one unit), and 200 grams of oranges (4 units), for a total of 6 carbohydrate units.

According to the "total daily carbohydrate rule", there are 6 more units allowed to reach the optimum daily carbohydrate intake, and 10 more units to reach the maximum allowed daily intake. The top group (110) container may thus include foods from Table 3 such as a bun (50 grams weight, 5 carbohydrate units) plus 15 grams of jam (2 units), 100 grams of fruit in syrup (e.g. peaches) = 5 units, etc. As mentioned, the kit may contain less than the optimum daily intake, with the rest eaten at home or in a restaurant. However, by stacking the kit each day with foods arranged in a pyramid according to their carbohydrate (per unit weight) content, one makes sure that the diet regimen is followed optimally.

In summary, in contrast with existing and known diet system and methods, the present invention provides a diet regimen based on a defined, limited carbohydrate daily intake. The system organizes foods according to carbohydrate content in a kit. The carbohydrate content is preferably defined by units, each food having a known number of carbohydrate units per food weight unit. The user can then freely eat the foods in the kit throughout the day. This diet does not count calories - in fact, the number of calories in the foods eaten is not important. The principle behind the system and method disclosed herein is the controlled daily intake of carbohydrates spread among a wide variety of foods, the organizing of these foods in a portable kit that has means to distinguish between the various carbohydrate content groups, and means to prevent the spoiling of these foods.

While the invention has been described with respect to a limited number of embodiments, it will be appreciated that many variations, modifications and other applications of the invention may be made.